IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Frank D. Husson, Jr.

Title: SOLAR WATER HEATER AND PASTEURIZER

Appl. No.: 10/039,277

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Examiner: Carl D. Price

Art Unit: 3743

DECLARATION UNDER 37 C.F.R. § 1.132

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Commissioner for Patents
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Sir:

PURPOSE OF DECLARATION

This declaration is to provide secondary considerations to traverse the rejection of this application in the Office Action dated September 16, 2004. The person making this declaration is the named inventor in the present application.

BACKGROUND

The invention relates to a simple, inexpensive and portable apparatus for heating and pasteurizing liquids, such as for example water, and methods for using and forming the apparatus. In particular, the invention is directed to such an apparatus adapted to operate using only solar energy as a heat source. As recited in claim 1 of the present application, the invention apparatus comprises a flexible water-tight resealable container having at least one resealable opening. The opening includes at least one water-tight spout with a mating resealable cap, which includes a bracket for receiving one or more reuseable temperature indicators. The temperature indicator is a glass tube containing wax adapted to melt at pasteurization temperatures. Thus, by

using the indicator, the user can be sure the liquid contents of the apparatus are safe for consumption. All references to the Solar Solutions water heater and pasteurizer or Aquapak included herein specifically refer to a device produced according to claim 1.

FACTS AND DOCUMENTARY EVIDENCE

The following exhibits are submitted to demonstrate the world wide need for and distinct advantages of a low cost and effective water pasteurization process, as provided in claim 1 of the present application. The documents submitted have been collected by the named inventor and demonstrate both a long felt need and expected commercial success of the claimed solar water heater and pasteurizer.

A communication distributed through the Department of Energy (DOE) and solar industry in April 2002 highlights the advantages and projected cost comparison for the solar water heater and pasteurizer (produced by Solar Solutions according to claim 1) relative to the existing methods of water treatment, shown here as Exhibit A. Simplicity of design and use is cited as a key advantage of the Solar Solutions water heater and pasteurizer as it eliminates the need for chemicals, electrical systems and heating lamps. The communication also states that manufacturing costs in Third World countries are expected to be less than $1, well below the costs of competing batch chlorine and UV-PV-filter systems.

As provided in Exhibit B, on April 29, 2003, Project Concern International (PCI) distributed the solar water pasteurization systems (the AquaPak, produced by Solar Solutions according to claim 1) to families in the rural community of Las Cuevitas, El Salvador to provide potable water to the residents. Prior to the distribution of the pasteurization systems, the community lacked adequate methods for the pasteurization of water, and without such methods or appropriate pasteurization devices generally consumed untreated lake water. On subsequent visits after distribution of the AquaPak, a PCI technician noted that the majority of families (22 out of 24) were pleased with the device, and any dissatisfaction with the device was due to either the time required for treatment, or a general lack of understanding of the relationship between unclean water and illness, and the need for clean water. On a visit 2 months after the initial

distribution of the AquaPak, the PCI technician noted that all families had continued to use the Solar Solutions AquaPak.

As provided in a paper prepared by the National Renewable Energy Laboratory (NREL) in January 1998, shown here as Exhibit C, consumption of potentially contaminated water leads to approximately 5 million deaths (mostly children) each year. Available treatment methods include treatment with chemicals and UV light, but such methods have their shortcomings. Chlorine treatment requires a continuous supply of chemicals and is only moderately effective, often requiring additional filtration steps. Large scale batch chlorination processes require trained operators and increase in complexity. UV lamp techniques similarly may require additional filtration steps, as well as the replacement of UV light bulbs. The paper further states at page iv that solar thermal pasteurization, while tending to cost more than alternative processes, may be the most effective processes and may require the least amount of overall maintenance. As provided on pages 50-54, the costs associated with the solar treatment devices illustrated in Exhibit C can be high. However, as provided in Exhibit A, the costs associated with manufacturing the Solar Solutions AquaPak are substantially lower than those for both UV and chlorine batch techniques, as well as orders of magnitude lower than the solar devices provided in the paper.

A note in the April 22, 2002 issue of BusinessWeek, presented herein as Exhibit D, reports that the Solar Solutions AquaPak (produced according to claim 1) hopes to cut down on the incidence of waterborne diseases in these Third World nations by providing a low-tech, low cost pasteurization device to eliminate harmful bacteria, viruses, and parasites from water. It is noted that prior to the AquaPak, no solar-powered pasteurization system cheap enough to deploy to Third World countries had been produced. The note quotes Jay Burch of the NREL as stating that the Solar Solutions AquaPak is roughly 10% of the cost of the next best type of solar purifier.

In the November 2004 issue of the Solar Cooker Review, the Solar Solutions AquaPak is described, provided herein as Exhibit E. The description states that proper use of the AquaPak can kill over 99.99% of waterborne pathogens present.

The inventor has contacted individuals in many Third World and lesser developed nations, as well as individuals associated with various international relief groups, in an effort to make available the Solar Solutions AquaPak, as presented in Exhibit F. Some of the countries contacted and/or where testing is currently underway include: Ghana (Exhibits F.1; F.5), Tajikistan (F.2), El Salvador (F.3; F.15), Nigeria (F.4), Kenya (F.6), Viet Nam (F.7), Cambodia (F.7), Uganda (F.8), Egypt (F.9), Liberia (F.12), and Mexico (F.14; F.16). The individuals contacted have expressed interest in the AquaPak since efficient low cost water pasteurization systems are in great demand in Third World and/or rural areas where potable water is unavailable.

The emails exchanged in Exhibit F.1 refer to the interest and need for producing potable water in Ghana and other developing countries.

The emails exchanged in Exhibit F.2 discuss a study being conducted of the AquaPakby UNICEF in Tajikistan and comment on positive results achieved in producing potable water.

The emails exchanged in Exhibit F.3 discuss distribution of the AquaPak in Cuevitas, El Salvador by Project Concern International.

The email in Exhibit F.4 is from a Nigerian interested in setting up a manufacturing and distribution facility for the AquaPak in Nigeria, and discusses the proposed introduction of the device to the Niger Delta Development Commission (NDDC).

The email in Exhibit F.5 is from the Olof Palme Peace Foundation, showing great interest in deployment of the AquaPak in Ghana, and further stating that the expected cost of the AquaPak (based upon manufacture in Ghana) would be affordable to the average Ghanaian.

Exhibit F.6, an email from an interested individual in Kenya, states that affordable clean water for human consumption is needed in both rural and urban locations and that commercial success of the device is achievable based upon expected production costs in Nigeria.

Exhibit F.7 is an exchange of emails with the International Development Enterprises (IDE) director for Viet Nam expressing an interest in testing the AquaPak in both Viet Nam and Cambodia.

Exhibit F.8 is an exchange of emails with a Ugandan individual detailing proposing the AquaPak to a USAID funded non-governmental organization (NGO) for distribution in Uganda.

Exhibit F.9 is an exchange of emails with a Director of the Wadi Environmental Science Center in Cairo, Egypt, discussing the need for low cost, effective water pasteurization devices in the Arab countries, including Egypt, as well as the possibility of producing devices in Egypt for less than US $1.

Exhibit F.10 is an order for the AquaPak from Solar Cookers International. The exchange also notes that the WAPI wax used to indicate a completion of the pasteurization process is working well in devices tested by another individual.

Exhibit F.11 is a request for the AquaPak from a Unilever Research and Development group located in Holland.

Exhibit F.12 is an email from the International Medical Corps regarding a desire to look into use of the AquaPak in Liberia.

Exhibit F.13 is an email exchange regarding manufacturing and distribution of the AquaPak in Kenya. The email further discusses production of the device and proposes additional demonstrations of the AquaPak in other Kenyan communities.

Exhibit F.14 is an email from an individual associated with Rotary International. The email notes that all parties viewing and testing the AquaPak device were impressed and wish to move forward with conducting a study of the effectiveness of the AquaPak. The email further details the presence of an individual in Mexico in the plastics industry with the manufacturing capabilities to produce the AquaPak.

Exhibit F.15 is an email regarding the deployment and study of the AquaPak in Las Cuevitas, El Salvador. (See also Exhibits B; F.3). In the email, the author states that in many instances, the man of the family takes the AquaPak when leaving to work in the field, thereby demonstrating both the portability and usefulness of the AquaPak.

Exhibit F.16 is an email expressing interest in the device and requesting suggestions for suitable test locations for the AquaPak. The email further states that the author is a member of a group interested in getting involved in clean water projects in Mexico.

DISCUSSION

The exhibits submitted with this declaration provide evidence of a substantial world wide need for low cost, efficient, portable, and easy to use solar pasteurization systems. Such solar pasteurization systems are necessary to reduce disease and death resulting from consumption of untreated water. Further, the exhibits provide evidence that prior to the Solar Solutions AquaPak, produced according to claim 1, no product meeting these needs was available. Finally, the exhibits provide evidence of the potential commercial success of the Solar Solutions water heater and pasteurization system produced according to claim 1.

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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